Capital Structure and Performance: Empirical Evidence from Vietnam

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Abstract

Capital structure decisions are very important with business because of their impact on firm performance. The purpose of this research was to use panel data regression model to examine the impact of capital structure on 448 Vietnam listed firm’s performance in the period from 2010 to 2016 with 3136 observations. The study used return on assets (ROA) and return on equity (ROE) as the measure of firm’s performance, total debt to total assets (TD) as the measure of capital structure, and control variables as firm size (SIZE), asset tangibility (AS), and liquidity (LQ). The findings indicated that there is a negatively significant impact of total debt (TD) on financial performance measured by ROA, but no significant impact of TD on financial performance measured by ROE. These results may indicate that capital structure decisions have a weak to no impact on Vietnam firm’s performance.

Key Words: Capital Structure, Debt to Assets, Firm’s Performance, Return on Assets, Return on Equity

JEL Classification : G32
1. Introduction

There are many researches about capital as well as capital structure because its impact on firm’s performance. Modigliani and Miller (1958) indicated that, in a perfect capital market, there is no difference between debt and equity financing regarding the value of the firms. Moreover, capital structure not only influences the return a firm earns, but also prevents the firms from economic shocks (Kraus and Litzenberger, 1973; Harris and Raviv, 1990). Or, Gleason et al. (2000) considered that the utilization of various levels of debt and equity in the firm’s capital structure is a specific strategy used for improving firm’s performance. If the firm does not possess capital up to a specific limit, it could not implement its business targets. And, capital structure decision is the mix of debt and equity that a firm used to finance its business (Damodaran, 2001). Berger et. al (2006) also concluded that more efficient enterprises were more likely to earn a higher return from a given capital structure, and that higher returns can act as a cushion against portfolio risk so that more efficient firms are in a better position to substitute equity for debt in their capital. Therefore, capital structure choice will cause a significant impact on firm’s performance (Roy Badar and Asif Saeed, 2013).

Since, Jensen and Meckling (1976) argument regarding the possibility of capital structure’s influence on firm performance, several researchers have followed this extension and implemented many studies that aim to examine the relationship between financial leverage and firm performance over the last decades. However, empirical evidence regarding this relationship is contradictory and mixed. While a positive relation between leverage level and firm performance had been found in some of this studies (Ebaid, 2009; Jensen, 1986; Harris and Raviv, 1990; Rajan and Zingales, 1995; Gleason et al., 2000; Fama and French, 2002; Abor, 2005; Daniel Kebede, 2011; Saeed, M, Gull, A, Rasheed, M, 2013; Mubeen and Akhtar, 2014. Other studies indicated a negative relationship between leverage level and firm performance (Gleason et. al., 2000; Agarwal and Elston, 2001; Chen et. al., 2004; Chen et. al., 2008; Jermias, 2008; Ebaid, 2009; Casmir and Anthony, 2012).

Generally, the literature examining the performance implications of capital structure choices in immense in developed markets (e.g. USA and Europe), little is empirically such Vietnam or developing countries. In such a country as Vietnam where capital market is less efficient and incomplete and suffers from higher level of information asymmetry than capital decisions to be incomplete and subject to a considerable degree of irregularity. It is, therefore, necessary to examine the validity of firm leverage levels impact on a firm performance in Vietnam as example of emerging countries.

The objective of this study is to examine impact of debt level on financial performance of 448 Vietnam listed firms during the period 2010 – 2016 using two accounting – based measures of firm performance: return on assets (ROA) and return on equity (ROE).
study chose the research period from 2010 to 2016, Vietnam firms witnessed many challenges and difficulties internally and externally, especially fiscal crisis from 2008. However, there have been little empirical studies being carried out in Vietnam in this period. Hence, the contribution of this study will help managers of firms to make better decisions on their capital structure. It also provides and adds new knowledge to corporate managers as a benchmark in making their own decision on the firm’s performance. The remainder of this paper is organized as follows: the following section gives a summary review of the related literature. The next section describes the research method. The subsequent section presents the analysis and results of empirical work.

2. Literature Review

Literature review includes some previous researches that are implemented to analyze the impact of capital structure on firm performance. These studies have undertaken to build up a clear picture related with the relationship among capital structure and firm performance. However, past studies show different results associated with capital structure and firm performance. Modigliani and Miller (1958) wrote a paper on irrelevance theory of capital structure and affect of capital structure on firm performance. At present, many researches have been carried out to determine the impact of capital structure on firm performance. There are many different views about affect of capital structure on firm performance. Ebaid (2009) indicated that the selection of capital structure is influenced by many factors. Therefore, it is easy to understand that financial theories offer different perspectives on the relationship between capital structure and performance of firm.

Jensen (1986) indicated that increasing debt level has positive effects on firm performance by reducing agency problem between shareholders and managers. The same results are studies of Gleason et. al, (2000), Fama and French (2002), Abor (2005), Daniel Kebede (2011), Saeed and Rasheed (2013), and Akhtar (2014). The findings concluded that long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio impact on firm performance measured by return on assets (ROA) and return on equity (ROE). Contrary to the above-mentioned viewpoint that capital structure negatively relates to firm financial performance, Harris and Raviv (1990) concluded that there is a negative relationship between debt in capital structure and firm performance. The same views about a negative relationship between debt level and firm performance are also found in many empirical evidences of Rajan and Zingales (1995), Chhber and Majumdar (1999), Gleason et al. (2000), Agarwal and Elston (2001), Fama and French (2002), Chen et. al (2004), Zeitun and Tian (2007), Rao et. al (2007), Jermias (2008), Ebaid (2009), and Casmir and Anthony (2012). Gleason et. al (2000) indicates that total debt has a significant, negative influence on performance. There are two implications drawn from the result. First, with presence of control
variables, capital structure has influence significantly on firm performance. Second, the negative coefficient indicates that retailers, in general, use more debt in their capital structure than would be appropriate. Chen et. al (2008) indicated that there is a negative change in performance when selected firms increase debt ratio. And, Jermias (2008) showed that leverage and performance is also significantly negative. The results indicate that competitive intensity and business strategy do affect the leverage performance relationship such that it is less negative for cost leaders than for product differentiations. Ebaid (2009) revealed that total debt is significantly negative influence on the performance measured by return on asset (ROA) of the firm. However, he proposed that there is not significant impact of the debt on financial performance measured by both gross profit margin (GPM) and return on equity (ROE). All the researches confirmed that there is a negative relationship between financial leverage and performance. And the results further suggest that liquidity, age and capital intensity have significant influence on financial performance.

The firms in operation always strives to maintain capital structure or liquidity of debts, or the ability to execute its debt obligation on time. Managing capital structure is an important thing that can cause a firm to be lucky if done properly, can also cause the firm to lose if done inappropriately. The impact of capital structure on firm performance can be concluded that capital structure reflects the adequacy of cash flow in settling short-term debts and long-term debts, so the firm does not experience operation problems that adversely affect the firm performance. Or, firm performance is a firm’s ability to manage finance to generate cash inflows, including profits so that cash is always available to settle debt payments that will soon mature.

From the cited empirical studies above, it is clear that most of the research concerning the relationship between capital structure and firm performance was conducted in developed countries and markets. A few studies empirically examined this relationship in transition or emerging countries. Empirical studies also provided mixed and contradictory evidences. The present study extends the literature on the impact of capital structure on firm performance by empirically examining the relationship between capital structure and firm performance in Vietnam. In fact, Vietnam has shifted from a centrally planned economy to a market-oriented economy, but there are still many issues. Vietnam’s financial market is lacking in information transparency, which can affect the financial decisions of businesses. It is important, therefore, to explore the validity of debt financing on firm performance under these unique economic settings.

3. Data, Measurement of Variables, and Model

3.1 Sample Selection
The data is collected in a period of 7 years (2010 – 2016) of 448 Vietnam non-financial firms on Stock Exchange with 3136 observations. The firms included in the sample cover nine industries, financial services institutions (banks, insurance firms) were deleted from sample.

### Table 1: Industry Distribution of the Sample

<table>
<thead>
<tr>
<th>Industry Name</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic materials</td>
<td>56</td>
</tr>
<tr>
<td>Industry</td>
<td>183</td>
</tr>
<tr>
<td>Consume goods</td>
<td>75</td>
</tr>
<tr>
<td>Health</td>
<td>13</td>
</tr>
<tr>
<td>Petroleum</td>
<td>3</td>
</tr>
<tr>
<td>Consumer service</td>
<td>35</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>22</td>
</tr>
<tr>
<td>Real Estate</td>
<td>45</td>
</tr>
<tr>
<td>Technology</td>
<td>16</td>
</tr>
</tbody>
</table>

#### 3.2 Definition of Variables

##### 3.2.1 Firm’s Performance

Literature used some different measures of firm’s performance, these measures include accounting – basing measures calculated from firms’ financial statements such as ROA, and ROE (Chen et. al, 2004, Abor, 2005). Or Zeitun and Tian (2007) also used two common accounting – based performance measures to evaluate the firm performance to be ROE and ROA, in which ROE is computed as the ratio of net profit to average total assets, and ROA is computed as the ratio of net profit to average total assets.

##### 3.2.2 Financial Leverage (Capital Structure)

Like previous literature (Abor, 2005; Abor, 2007) financial leverage was measured in the study by one ratio: Total debts to total assets (TD)

##### 3.2.3 Control Variable

Prior researches suggest that firm’s size, asset structure and liquidity may influence firm performance (Ramaswamy, K. (2001), Frank and Goyal (2003), Jermias (2008). Therefore, this study controls the differences in firm’s operating environment by including variables as firm size, asset structure and liquidity in the model to control for effects of three factors on dependent variable (i.e. firm performance).

#### 3.3 Empirical Model

We employed the panel data regression model. Two estimation methods used in panel data analysis are Fixed Effect Method (FEM) and Random Effect Method (REM) to assess the impact of capital structure on Vietnam non-financial listed firms’ performance. We have
chosen to use the panel data regression model because it helps analysis of cross-sectional and time series data, as well as provides yearly statistical results. Our regression model equation will be:

$$\text{Firm Performance}_{it} = \alpha_0 + \alpha_1 \text{TD}_{it} + \alpha_2 \text{SIZE}_{it} + \alpha_3 \text{AS}_{it} + \alpha_4 \text{LQ}_{it} + \varepsilon_{it}$$

Where:
- $\text{TD}_{it}$ = total debt to total assets for firm $i$ in year $t$.
- $\text{SIZE}_{it}$ = logarithm of total assets for firm $i$ in year $t$.
- $\text{AS}_{it}$ = fixed assets to total assets for firm $i$ in year $t$.
- $\text{LQ}_{it}$ = total assets to short term debt for firm $i$ in year $t$.
- $\varepsilon_{it}$ = the error term.

4. Results and Discussion
4.1 Descriptive Statistics

The Table 1 below shows the descriptive statistics of selected variables. The results indicate that the mean of ROA and ROE of all Vietnam listed firms is about 5.90% and 12.15% over the period from 2010 to 2016, generally, it is not high. Standard deviation of ROA and ROE are 6.89% and 51.83%, minimum and maximum values are 0.00, 0.00 and 78.37%, 251.21% respectively. It indicates that there is an enormous difference in performance capacity between the firm having the largest ROA, ROE and the firms having the lowest ROA, ROE. This is may be because most of Vietnam listed firms in this period still suffer from the world financial crises. As a result, this problem may impact negatively on firm’s performance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>5.9023</td>
<td>6.8914</td>
<td>0</td>
<td>78.370</td>
</tr>
<tr>
<td>ROE</td>
<td>12.150</td>
<td>51.829</td>
<td>0</td>
<td>251.21</td>
</tr>
<tr>
<td>TD</td>
<td>51.829</td>
<td>39.663</td>
<td>0.1982</td>
<td>1606.9</td>
</tr>
<tr>
<td>AS</td>
<td>39.457</td>
<td>22.646</td>
<td>0.1004</td>
<td>97.740</td>
</tr>
<tr>
<td>LQ</td>
<td>5.1065</td>
<td>17.368</td>
<td>0.0622</td>
<td>504.43</td>
</tr>
</tbody>
</table>

The mean for the total debt to total assets (TD) is 51.83%, indicating that more than 51% of the total assets are financed with debt. However, minimum value of TD is only about 0.20%, while maximum value of TD reaches more than 16.06 times. The research results show that there is a big difference in capital structure among Vietnam listed non-financial firms. Moreover, this result also indicates that most Vietnam listed firms depend on debts and this is the source of business risks, or Vietnam listed firms operate with high-level of
financial leverage. Besides, the mean value of firm size is $e^{13.37}$ millions VND, minimum value is $e^{9.21}$ millions VND and maximum value is $e^{19.01}$ millions VND.

Fixed asset to total assets ratio (AS) on the other hand had a minimum and maximum value of 0.10% and 97.74% respectively with a mean of 39.45%. It indicated that mean of current assets of Vietnam listed firm account for over 60.55%. It is also the base for analyzing the efficiency of business performance. Moreover, mean of liquidity (total assets to short term debt) which is one of important ratios affecting to firm’s performance is account for 5.11%, minimum value is 0.06%, and maximum value is 5 times. There is an enormous difference between the firms having highest rate of liquidity ratio and the firms having lowest liquidity ratio.

4.2 Correlation Analysis

To check for the possible multi-co-linearity among the independent variables, we calculate the Pearson’s co-efficient of correlations for the independent variables in table 3. In table 3, the multi-co-linearity problem is not too severe among the selected independent variables (TD, SIZE, AS, LQ). The value of correlations among independent variables are not so high from -0.0221 to 0.5926. The correlation of 0.7 and above is considered as highly correlated. However, the above data with correlation values are less than 0.7. The low correlation coefficients show that there are have no multicollinearity problems in the researching model or there are have no multicollinearity problems among chosen financial variables.

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
<th>TD</th>
<th>SIZE</th>
<th>AS</th>
<th>LQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>0.5926</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TD</td>
<td>-0.2865</td>
<td>0.0256</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0221</td>
<td>0.0976</td>
<td>0.1665</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>-0.0551</td>
<td>-0.0651</td>
<td>-0.0332</td>
<td>0.1150</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LQ</td>
<td>0.0288</td>
<td>-0.0376</td>
<td>-0.1468</td>
<td>-0.0664</td>
<td>0.1696</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Note: Correlation between two identical variables result in 1.0000, indicating a perfect correlation

In addition, the table 3 also indicates that there are negative correlation relationships among listed firm performance and three independent variables (Capital Structure – financial leverage - TD, Firm size - SIZE, Capital structure – AS). It means that an increase in ratios of total debts on total assets, firm size, and net fixed assets on total assets will lead the reduction of firm’s performance, or ROA and ROE will be reduced. Besides, firm performance has positive correlation with liquidity - LQ. As a result, listed firms want to enhance efficiency of
their performances, they will have to reduce dependence of debts, and to use fixed assets reasonably.

4.3 Regression Analysis

Regression analysis is used to assess the relationship between firm performance (ROA and ROE) and capital structure (TD) with three control variables (SIZE, AS, LQ). The result indicates that with the value of Prob = 0.0000, the research model is appropriate to analyze the impact of capital structure on Vietnam listed firms’ performance.

Table 4: Capital Structure and Performance Measured by ROA

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std.Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>13.6915</td>
<td>2.6522</td>
<td>5.16</td>
<td>0.000</td>
</tr>
<tr>
<td>TD</td>
<td>-0.0082</td>
<td>0.0023</td>
<td>-3.60</td>
<td>0.000</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.4058</td>
<td>0.1977</td>
<td>-2.05</td>
<td>0.040</td>
</tr>
<tr>
<td>AS</td>
<td>-0.0480</td>
<td>0.0069</td>
<td>-6.97</td>
<td>0.000</td>
</tr>
<tr>
<td>LQ</td>
<td>-0.0090</td>
<td>0.0051</td>
<td>-1.77</td>
<td>0.076</td>
</tr>
<tr>
<td>R^2</td>
<td>0.0138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>19.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig</td>
<td>0.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tables 4 shows estimation results on regression coefficients with Fixed Effect Method in testing the relationship between capital structure and firm performance. Table 4 also presents the results of testing the relationship between capital structure measured by ratio of TD to total assets, and firm performance measured by ROA. The results indicate a significant negative relationship between TD and ROA. The coefficient of TD is negative and statistically significant at level of confidence of 99 percent, which suggests that an increase in TD associated with decrease in (ROA). This result implies that as a Vietnam firms’ debt level increases, its return on asset is expected to decline because the excessive use of the leverage might impose high interest costs. Finally, the results show that firm performance (ROA) has opposite relationship with all three control variables (firm size, asset structure, and liquidity) and is statistically significant at 5%, 1% and 10% level. The results also imply that larger firms can have more opportunities to enhance their performance results because it is easier for them approaching more debt sources with lower cost. And, large firms often managed their fixed assets less efficiently, so it has a negative impact on their performance.
Table 5 shows estimation results on regression coefficients with Random Effect Method. The results indicated the relationship between capital structure measured by ratio of total debt to total assets, and firm performance measured by ROE. The results indicate that TD has no significant relationship with firm performance measured by ROE. And, the coefficient of TD is not statistically significant. However, the results still indicate that firm performance (ROE) has also significant relationship with two control variables (firm size and asset structure) and has no significant relationship with liquidity. Although, TD has no significant relationship with firm performance measured by ROE, ROE is still an important independent variable, showing the capital structure of firms. Therefore, we retain ROE in the model for evaluation.

In summary, the findings in Tables 4 and 5 concluded that capital structure choice has an unclear significant impact on Vietnam listed firms’ performance. These results contradict with findings of previous literature either in developed or transition economies which document a significant impact of capital structure on firm performance either positively (Gosh et al., 2000; Abor, 2005; Kyereboah-Coleman, 2007) or negatively (Balakrishnan and Fox, 1993; Majumdar and Chibber, 1999; Gleason et al., 2000; Zeitun and Tian, 2007; Abor, 2007).

5. Conclusions

There is a large literature investigating the influence of capital structure choice on firm’s value and performance since the study of Modigliani and Miller (1958). Most of these studies concluded the impact in the developed countries, very few in emerging or transition economies such Vietnam. The study investigates the impact of capital structure choice on performance of 448 Vietnam listed non-financial firms as one of emerging or transition economies. Two accounting-based measures are used for financial performance (ROA, and
ROE). The empirical tests indicate that capital structure (TD) impacts negatively the firm performance measured by ROA. While, capital structure (TD) has no significant impact on firm performance measured by ROE. These results lead the study to conclude that capital structure choice, in general terms, has no clear influence on the financial performance of Vietnam listed firms.

Issues relating to capital structure remain contentious and a puzzle especially in emerging or transition markets such Vietnam. Further researches could examine the determinants of capital structure of Vietnam firms such as size, growth, market risk, etc. and compare results with those reached in developed economies. The relationship between financial leverage and Vietnam firms’ value also need to be empirically examined. The results of the study reveal that TD impacts negatively the firm performance measured by ROA, so, further research could examine the relationship between maturity structure of the firm’s debt and its decisions, as well as performance. Finally, further research could examine the joint impact of both capital structure and ownership structure on firm performance.

References


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